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EXPRESS MAIL RECEIPT NO. EV096523616US

DEPOSITED ON SEPTEMBER 1, 2004

PATENT  
DKT. STL11849

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Grant Edward Carlson and Karl Heinz Cunha**  
Assignee: **SEAGATE TECHNOLOGY LLC**  
Application No.: **10/817,266** Group No.: **3635**  
Filed: **April 2, 2004** Examiner: **Unknown**

For: **REINFORCED SHELF STRUCTURE AND METHOD**

**Mail Stop Petition**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, VA 22313-1450**

**PETITION TO MAKE SPECIAL FOR NEW APPLICATION**  
**UNDER M.P.E.P. § 708.02, VIII**

**1. Petition**

Applicant hereby petitions to make this new application, which has not received any examination by the Examiner, special.

**2. Claims**

All the claims in this case are directed to a single invention. If the Office determines that all the claims presented are not obviously directed to a single invention, then applicant will make an election without traverse as a prerequisite to the grant of special status.

**3. Search**

A search has been made by an attorney and a professional searcher in the following:

Field of search: **Memory, Electrical, Storage, Supports, Metal Working,**  
**Static Structures, and Stock Material or Miscellaneous Articles**

Class/Subclass:

**29/897.32, 897.34**  
**52/630, 792.11, 798.1, 799.13**  
**211/41.17, 135, 153**  
**360/98.01, 98.06**  
**361/685, 727, 788**  
**428/178, 594, 596, 603, 604,**  
**684**  
**711/114, 115**

Copies of the search result reports from Patents, Past and Present, and from Mark Spector, professional searchers, are submitted herewith.

#272069

09/03/2004 HARDEL1 00000042 10817266  
01 FC:1460 130.00 DP

#### **4. Copy of references**

All of the references most closely related to the subject matter are of record as filed with the Information Disclosure Statement, so no copies are submitted herewith, in accordance with M.P.E.P. 708.02VIII(D).

#### **5. Detailed discussion of the references**

There is submitted herewith a detailed discussion of the references, which discussion particularly points out how the claimed subject matter is distinguishable over the references.

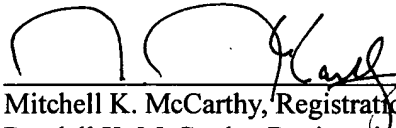
#### **6. Fee**

The fee required by 37 C.F.R. 1.17(h) is to be paid by:

Attached is a check in the amount of \$130.00.

Charge any additional fees required by this paper or credit any overpayment to Deposit Account No. 06-0540. A duplicate of this paper is attached.

Respectfully submitted,



Mitchell K. McCarthy, Registration No. 38,794  
Randall K. McCarthy, Registration No. 39,297  
Fellers, Snider, Blankenship, Bailey & Tippens  
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Oklahoma City, OK 73102-8820  
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Assignee: SEAGATE TECHNOLOGY LLC  
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For: REINFORCED SHELF STRUCTURE AND METHOD

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DETAILED DISCUSSION OF THE REFERENCES IN SUPPORT OF  
PETITION TO MAKE SPECIAL FOR NEW APPLICATION  
UNDER M.P.E.P. § 708.02, VIII

Sir:

The embodiments of the present invention as claimed by the independent claims are characterized, at least without limitation, by the following recited features:

Claim 1

*"the second panel opening receivingly engaging the first panel boss permitting contiguous mating contact of the first and second planar surfaces."*

Claim 8

*"the joined panels defining a cross sectional thickness that is less than a sum of the first and second corrugation heights."*

Claim 14

*"stacking the panels by disposing the first corrugation in the second opening and the second corrugation in the first opening."*

None of the references of record teach or suggest the manner and method of joining corrugated panels according to the embodiments of the present invention.

Some previously attempted solutions involve imparting a corrugation pattern to a single sheet of material to achieve desired structural advantages. Such attempts are seen in Lachman '254, Voegeli '795, Bodnar '495, Etchison '469, and Deeley '990.

Wootten '791 exemplifies attempted solutions not involving corrugated panels, but rather having a plurality of folded tabs 70 for connecting panels together. The embodiments of the present invention contemplate an advantageous manner and method for interlacing oppositely directed corrugations, or embossments (sometimes referred to as "bosses"), which impart structural integrity to a sheet of material (see for example, Specification page 13, lines 18-30). The tabs 70 are not strengthening corrugations or bosses for the respective sheets from which they are folded, and as such they do not read on the corrugations and bosses of the embodiments of the present invention as claimed.

Atkinson '974 exemplifies attempted solutions involving nesting like-directed corrugations in adjacent sheets of material. FIG. 2 shows the corrugation formed in sheet 14 is disposed in the same direction as, and abuttingly engages the concave portion of the corrugation formed in sheet 12. It will be noted that the cross sectional thickness of the joined sheets 12, 14 in this manner is greater than the sum of the corrugation heights.

Some previously attempted solutions involve abuttingly engaging the corrugation of one corrugated panel against the planar web member of another corrugated panel. In Cole '551 the oppositely-directed indentures 53, 54 are staggered such that the indenture 53, formed in sheet 51, is attached to sheet 52. Likewise, the indenture 54, formed in sheet 52, is attached to sheet 51. It will be noted that the cross sectional thickness of the joined sheets 51, 52 in this manner is greater than the sum of the indenture 53, 54 heights.

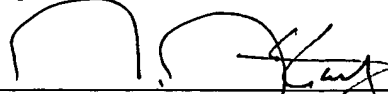
Some previously attempted solutions involve abuttingly engaging the corrugations of a corrugated panel against a planar panel. Such attempts are seen in Rushton '892, Seksaria '745, and Behr '266. It will be noted that the cross sectional thickness of the joined panels in this manner is greater than the sum of the corrugation heights (in this case one corrugation height).

Scurlock '046 in FIGS. 1-3, 5-7, and 10-11 sandwiches a single corrugated panel, like that discussed above, between two planar panels. Scurlock '046 in FIGS. 4, 8, and 9 abuttingly engages oppositely-directed corrugations. Again, it will be noted that the cross sectional thickness of the joined panels in this manner is greater than the sum of the corrugation heights of the corrugated panels.

None of the references of record disclose or suggest the novelty of the present invention as recited by the language of the independent claims. Accordingly, the references of record cannot sustain a Section 102 or 103 rejection.

It is submitted that all of the elements set forth in M.P.E.P. §708.02 subsection VIII have now been provided in this petition to make special. It is requested that this petition be granted and that the presented claims be examined as soon as possible.

Respectfully submitted,



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**PPP**

Express Mail Receipt No. EV096532616US-  
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## Patents, Past & Present

### Patent & Trademark Research and Document Retrieval



Ms. Zeina Smith  
Paralegal  
Seagate Technology LLC  
Intellectual Property Department COL-2LGL  
Longmont CO 80503

November 5, 2003

Re: Patentability Search: "Nested Emboss? Storage Shelf Structure"  
Your Reference: STL11849      Our Reference: SEA483 CO

Dear Zee:

A patentability search directed to the above referenced, "Nested Emboss? Storage Shelf Structure", was conducted. The search was specifically directed to a thin and strong shelf construction consisting of sheets with cutouts and embossing where the embossing of one sheet nests within the cutouts of a layered sheet.

The Fields of Search, including published applications, were: US Class 211, subclasses 41.17, 135, and 153; Class 29, subclasses 897.32, and 897.34; Class 52, subclasses 630, 792.11, 798.1, and 799.13; and Class 428, subclasses 178, 594, 596, 603, 604, and 684. The USPTO computer database was also used for keyword and cross-reference searching.

The following U.S. patents were found:

6139974	composite panel	Atkinson, Alan William et al.
6065266	light structural metal plate	Behr, Friedrich et al.
5689990	sheet material	Deeley, Geoffrey Thomas
5244745	structural sheet and panel	Seksaria, Dinesh C. et al.
4353469	support shelf for printed circuit boards	Etchison, Jr., John O. et al.
4074495	sheet metal panel	Bodnar, Ernest Robert
3793791	structural Element	Wootten, William A.
3258892	panel structure	Rushton, F.N.
3133795	rigidized panels	Voegeli, H.E.
3008551	panel construction	Cole, N.E.
2481046	panel structure	Scurlock, J.C.
1154254	sheet metal panel	Lachman, M.

If you have any questions or comments please feel free to contact me.

Kind Regards,

Annie McKrill  
PATENTS, PAST & PRESENT



last line of this report is "end end"

From: Mark Spector 4452 South 36<sup>th</sup> ARL VA 22206 midmuzk@aol.com 703.3798824  
FOR: Mickey McCarthy<sup>ESQ</sup> Fellers Snider, Bank One Bldg, 100 N. Broadway #1700  
Oklahoma City OK 73102 405.2320621 McCarthy|PLaw MMcCarthy@fellerssnider.com

RE: MULTIPLE DISC ARRAY search

Dear Mr. McCarthy :

3.28.04

In response to your letter of 3.16, a search in the US Patent Office was conducted for a multiple disc array of stacked disc drives, removably installed in a shelved cabinet fixture with attached backplane, employing a partition having a plurality of openings to receive a portion of a data storage device, and employing a 1 to 1 correspondence between connectors such that the failure of any one connector only affects one data storage device.

I assume you're aware of US 5926366 Cunha, 5868261 Cunha, 5775418 Cunha and 20040056568 Carlson.

US Primary Patent Examiner D. Martin au2837, was consulted.

A search in US Patents was conducted in  
Memory, Class 711, Subclasses: 114 and 115  
Electrical, Class 361, Subclasses: 685, 727, 788  
Storage, Class 360, Subclasses: 98.01 and 98.06.

The following 23 US Patents and Pubs disclose multi disk and drive array configurations and connections.

6683793 Campbell : "Distributed Scalable Backplane"

"A backplane is disclosed for attaching storage devices to the backplane that utilize removable media."

6651138 Lai : "Hot-plug memory cartridge power control logic"

"a plurality of cartridge connectors coupled to the memory system board, each of the plurality of cartridge connectors configured to receive one of the plurality of memory cartridges and further configure to facilitate the insertion and removal of the memory cartridges while the system is powered-up"

6574687 Teachout : "Fibre Channel Data Storage System"

"Electrical cabinet for storing a plurality of disk drives. The cabinet has an array of slots, each one of the slots being adapted to receive a corresponding one of a plurality of disk drives. Each one of the disk drive has a pair of ports."

6464509 Emberty : "Removable Storage Media in a Data Storage System "

"A disk drive library has individual disk drives that are each provided with a combination mechanical and electrical connector for interfacing with a library backplane. Each connector has two components. The first component is mounted to the drive and has an electrical contact with a metallic burnished core of highly conductive material that is surrounded by an annular magnet. The mating component is on the backplane and is similarly formed with the opposite pole of a second magnet. When the two components are brought into close proximity, the two contacts attract each other to mate the contact cores, and thus establish an electrical connection. This connection is augmented by a spring mechanism to provide a solid, reliable connection.

6442022 Paul : "Removable Disc Drive Carrier"

"A replaceable SCA drive adapter board detachably connected to the rear of a disc drive carrier"

6243790 Yorimitsu : "Re-arranging Logical Drives in a Disk Array "

"A plurality of logical disks within one cabinet. The present invention provides a disk array apparatus in which logical disks can be easily re-arranged within the array, or added to the array. "

6230217 Tuccio : "Host computer coupled to bank of disk drives"

"The bank of disk drives has a plurality of sets of electrically connected disk drives, each one of the sets being connected to a corresponding one of the input/output interfaces of a corresponding one of the rear-end directors through the adapter card connected to such corresponding one of the rear-end directors and, through the printed circuit board, to the adapter card in the another one of the electrical connectors and to the input/output interface of the rear-end director in such other one of the electrical connectors."

6076142 Corrington : "User Configurable Raid System"

"A user configurable RAID system designed to provide RAID functions as well as mass storage functions in a non-RAID mode. Flexibility is built into the system to allow the user to configure the SCSI bus to which removable drive modules are connected into one or more channels."

5974490 Fujimura : "Plural Disk Unit Apparatus"

"A plurality of disk units capable of being removably inserted by plugging are directly mounted on the front side of the mother board through bus connectors, while connector units for external connection and having connectors of the control buses, terminal units having terminal circuits of the control buses, power units for supplying power to the disk units."



5913926 Anderson : "Expandable Modular Data Storage"

"A plurality of substantially identical, vertically stacked storage device housings adapted to slidably receive a data storage device, and mechanical connection elements for releasably connecting the top of one storage device housing to the bottom of a storage device housing stacked thereon. The array is connectable to a host computer."

5822184 Rabinovitz : "Modular Disk Drive Assembly"

"A modular data device assembly for a computer is disclosed, wherein the assembly has a housing that is designed to fit into a conventional, industry standard size expansion bay. Individual plug-in data storage devices such as hard disk drives or CD-ROM drives are disposed vertically in a stacked formation within the housing. A motherboard with plug-in connectors to which the drives are connected allows easy replacement of defective data devices, which devices slide in or out. The disk drives and modular data device assemblies may be arrayed in series or in parallel to a controller. By its modular structure and redundant storage functions, the present invention benefits from what is known as Redundant Array of Inexpensive Disk principle."

5752257 Ripoll : "Redundant array of removable cartridge disk drives"

"A memory system comprises an array of parallel removable hard disk cartridges"

5729763 Leshem : "Data storage system "

"Each disk interface includes a switch adapted to allow data to pass to another disk drive in the channel thereof; and, when the other channel becomes inoperative, coupling the disk drive in the inoperative channel to the operative fiber channel. With such arrangement, a disk drive may be removed without requiring a shut-down of the storage system (i.e., the disk drive may be "hot swapped")."

5652697 Le : "Computer System Backplane"

"The backplane is secured in the chassis without the use of screws. The fingers are defined within channels formed by a structure at the rear of a disk drive cage. The computer system further includes a plurality of disk drives mounted on trays which have rear pins that engage guide apertures formed in the backplane."

5517373 Hanson : "Disk Drive System w/Plural Removable Modules "

"A removable data storage system comprising: a plurality of self-contained portable disk drive modules."

5247427 Driscoll : "Disk Array Subsystem"

"A disk array subsystem adapted for use in a data processing system according to this invention comprises a chassis, a backplane fixedly mounted inside said chassis, disk drive module guide plate means, said disk drive module guide plate means including a first guide plate having a plurality of parallel slotted channels, said first guide plate being fixedly mounted inside said chassis, a plurality of disk drive modules slidably and removably mounted on said first guide plate, each disk drive module including an elongated T-bar slidably mounted in one of said parallel slotted channels, said disk drive module guide plate means serving to support said disk modules and to place the disk drive modules mounted thereon in approximate alignment with said backplane for electrical connection therewith, controller means for controlling the operations of said disk drive modules, and power supply means for powering said disk drive modules. "

5124886 Golobay : "Drive Canister Module"

"A modular cabinet for enclosing a plurality of disk drive canisters."

4754397 Varaiya : "Fault Tolerant Modular Subsystems"

"The facility includes a housing array for containing a plurality of hardware element modules such as disk drives, a plurality of modularized power supplies and plural power distribution modules, each being connected to a separate source of primary facility power. Each module is self aligning and blind-mateable with the housing and may be installed and removed without tools, without disturbing the electrical cabling within the cabinet."

3725883 Bennett : "Modular Disk File Unit"

"a plurality of modular memory disk units in separate housings mounted in a single cabinet is described."

20040057203 Rabinovitz : "Modular Data Storage Device Assembly "

"A modular data device assembly includes a chassis that has an open front and a back. The chassis also has exterior dimensions that correspond to the dimensions of an industry standard drive bay. The chassis further has a plurality of slots that are disposed inside the chassis. The modular data device also includes a plurality of disk data storage devices, a backplane, and a connector. Each disk data storage device is disposed in one of the plurality of slots. The backplane is disposed in the back of the chassis. The backplane has a plurality of connectors which are mechanically coupled thereto and each of which is connected to one of the disk data storage devices. The power source connector is mechanically and electrically coupled to the backplane."

20030070043 Merkey : "High speed fault tolerant storage systems"

Raid Network System "RNS is housed in an expansion cabinet mountable to a 19 inch rack by slide rails that permits up to eight of those RNS devices to be inserted into a chassis forming a single DASD assembly. Drive bays are accessible by sliding the unit out of the cabinet and adding or removing drives into empty drive bays in the unit. The cabinet assembly allows hot swappable drives to be added to the RNS expansion cabinet."

20030041201A1: Rauscher : "Raid system with multiple controllers "

"A rack 700 is used to support the chassis of the RAID system. The rack 700 comprises the left vertical end 715, and right vertical end 705, which are connected by horizontal shelves 710, 720, 730, 740, 750, and 760. The storage array controller chassis 100 rests on shelf 710, and storage array controller chassis 200 rests on shelf 720. DASD chassis 300 rests on shelf 730, DASD chassis 400 rests on shelf 740, DASD chassis 500 rests on shelf 750, and DASD chassis 600 rests on shelf 760. "

20020144044 Moon : "Removable disk storage array"

"Hot pluggable multi-drive magazine having a housing for holding a plurality of hard disk drives, each drive connected to receive power and data from the magazine in a controlled fashion, and at least one magazine receiving system for physically receiving the magazine and for thereupon providing power, data and control connections to the magazine, such that when the magazine is received within the magazine receiving system, the hard disk drives selectively receive power and data connections via the magazine and receiving system from a host computer. The magazine may be hot-disconnected from an active computing system."

A search in the US PTO EP (Euro) and JP (Japan) databases uncovered the following 3 references.

WO9960832A1: ELECTRONIC CIRCUIT CARD ASSEMBLY

Inventor: KUCHTA, Douglas, Allan; LAPREE, Scott, Raymond; SEVERSON, Paul, Steven; THOMFORD, Paul, Jon;

Mark Spector  
MULTIPLE DISC ARRAY

3.28.04

Assignee: INTERNATIONAL BUSINESS MACHINES CORPORATION, New Orchard Road, Armonk, NY 10504, United States of America

Published / Filed: 1999-11-25 / 1999-03-02

Application Number: WO1999US0004873

IPC Code: H05K 5/00; H05K 7/02; H05K 7/10; H05K 7/14; H02J 3/06; H02J 7/00; H02J 7/02; H02J 9/00;

Priority Number: 1998-05-21 US1998000082897

Abstract: An electronic system contains a backplane circuit card assembly for distribution of electrical signals to one or more modules. The card assembly includes a plurality of pluggably connected base cards (220, 221), which provide redundant function. Preferably, two base cards (220, 221) in a single plane are connected by a single smaller parallel offset jumper card (222), the cards being coupled by pluggable connectors (301, 302, 401, 402, 501-504). The system preferably includes redundant power supply modules (201, 202) and redundant functional modules (203-216), which plug into the backplane from both sides. The modules connected to any one of the base cards provide minimum system functionality in the absence of the other card and its modules. Due to the redundant function, it is not only possible to replace any module, but is possible to replace a base card itself, while the system remains operational. The exemplary embodiment is an intelligent redundant array of independent disks (RAID) storage server having concurrent maintenance capability.

Attorney, Agent or Firm: TRUELSON, Roy, W. ;

WO9745784A3: ENCLOSURE FOR REMOVABLE COMPUTER PERIPHERAL EQUIPMENT

Inventor: YOUNG, JAMES, PATRICK; CLEVENGER, DONALD, LEE;

Assignee: CMD TECHNOLOGY INC. United States of America

Published / Filed: 1998-01-15 / 1997-05-13

Application Number: WO1997WO0008100

IPC Code: G06F 1/16;

Priority Number: 1996-05-31 US1996000656032

Abstract: An enclosure system for receiving a number of plug in computer peripheral devices, such as hard disk drives in a disk array, utilizes front and rear cages or enclosures (12, 30) that are separated by a vertical backplane (20) having internal circuit interconnections and multi-pin docking connectors (22, 24) on each face. A front bezel (44) provides access to the backplane (20) through the front cage enclosure (19), so that trays containing the drives (71) can be inserted and plugged into the connectors (29). The vertical spacing is arranged to be modifiable, so that different numbers of higher profile and lower profile devices can be used.

Mark Spector  
MULTIPLE DISC ARRAY

3.28.04

EP1026688A3: Removable integrated multiple internal disk drive subsystem  
Inventor: Churchill, Robert J.; Hopla, Steven D.; Reyes, Jose G.; Hannigan  
Assignee: Siemens Information and Communication Networks Inc.  
Published / Filed: 2001-06-13 / 2000-01-31  
Application Number: EP2000000300730  
IPC Code: G11B 33/12;  
Priority Number: 1999-02-02 US1999000243151

Abstract: A computer system and a method of servicing the system utilize a disk drive array assembly (12) that can be internally installed into and removed from a host electronic casing (10) of the system as a single unit. The disk drive array assembly is an integrated single unit, housing a number of hard disk drives (18, 20, 22, 24 and 26). The disk drive array assembly can support a redundant inexpensive, or independent, disks (RAID) system. The disk drive array assembly is comprised of a disk cage (46), a backplane (16) and the hard disk drives. The disk cage and the backplane form an integrated housing unit (14 and 16) for the hard disk drives. The disk cage includes a number of tracks (50a, 50b, 52a, 52b, 54a, 54b, 56a, 56b, 58a and 58b), located on two lateral interior surfaces of the disk cage. Each track on one surface of the disk cage is laterally aligned to a track on the other surface. A pair of aligned tracks is designed to guide a single hard disk drive that is being inserted into the disk cage. In addition, the same pair of aligned tracks provides support for the disk drive after being inserted into the disk cage. The unitary design of the disk drive array assembly allows the disk drive array assembly to be transferred from one computer system to another computer system in an intact condition. Furthermore, the unitary design provides easy access to other electronic devices contained within the host electronic casing, since the disk drive arrays assembly can be removed from the host electronic casing in the same intact condition. Attorney, Agent or Firm: Mohun, Stephen John ;

In the time allotted, I've selected here what struck me as most relevant from several thousand multi disk array patents, but as in any patent search, this one could be continued and extended. I repeatedly went through this disclosure of over 75 pages of text and figures and this is my most relevant collection of multi drive arrays, cabinets and connections. ~14hrs@30, email, no copy.

TOTAL: \$ 430

Thank-You Mr. McCarthy

four hundred thirty

page seven of eight